April 20, 1962

MEMORANDUM FOR: Dr. Jerome B. Wiesner

FROM: AICBM Panel

SUBJECT: NIKE ZEUS and Hard Point Defense

The Panel discussed the future of the NIKE ZEUS program with representatives of DDR&E and the Army, the Air Force and WSEG. Some general comments arising from these discussions are the following

(1) Hard point AICBM defense of command and control centers of high value appears to us to offer an important defense element. If the presently envisaged performance of "sprint" anti-missiles and ZMAR radars can be achieved, such defenses seem feasible and attractive. We have not attempted to compare the economics of active defense with other measures such as extreme hardening, redundancy, or mobility.

(2) DDR&E is considering a reoriented NIKE ZEUS system which would intercept incoming ICBM's at much lower altitude and would thus permit atmospheric decoy discrimination. In order to do this, they propose to raise substantially the standards for acceptable damage to a city. Overpressure of as much as 15 psi and thermal flux as high as 100 calories per square centimeter is suggested as possible "last-ditch" damage criteria. This approach would appear to only make sense in combination with a city blast shelter program. In this respect, these studies try to identify the hard point defense and the city defense problem by re-defining cities as a hard target.

(3) Consideration of hard point AICBM defense of hardened ICBM sites indicates that this is only worth considering if the survival probability of the hardened site per se is small and the cost per anti-missile is low. Most of the anti-missile systems do not meet this requirement.

(4) We believe that the potential usefulness of an advanced hard point AICBM system is sufficient to justify immediate commencement of R&D on it. This is especially true since there are important unsolved design problems in the development of a sprint missile, such as heating of the case and the possibility of structural failure of the propellant and other elements. One of the main difficulties with the AICBM program in the past has been that deployment of a system was always so far in the future that the usefulness of the system by that time was very questionable.

(S) We recommend, therefore, that there be much more vigorous pursuit of the R&D program for a hard point AICBM system with particular emphasis on the development of a high performance (sprint) anti-missile missile. It will be important to keep the requirements on performance, especially of the radar, sufficiently modest to permit rapid development. This will probably mean focusing on one application rather than demanding applicability for several purposes. We, therefore, recommend that command and control centers be considered the priority application of hard point AICBM defense rather than "hard city" defense.